



charge in cfs			Manganese Concentration Coefficients		
	Intercept	coefficient		B	Intercept
			Low Flow November-March		
M34	-2.771	0.394	-2.28954	<u>0.38718</u>	A72 0.004 110.08249
CC48	1.752	0.130	6.77165	<u>0.10539</u>	M34 0.039 120.28045
A68	-11.131	0.498	-3.62869	<u>0.45153</u>	CC48 0.024 636.59640
					A68 0.025 37.87432

Discharge Relationships among the three gages

MONTH	J	F	M	A	M	J	J
Intercept	1	1	1	1	1	1	1
A 72	64	63	77	155	682	1196	624
M34	22	22	28	58	266	468	243
CC48	14	13	15	22	91	158	83
A68	25	25	31	66	329	585	300
Ground water	3	3	3	9	-3	-14	-2

1/(1+BQ) Discharge Representation

A 72	0.7962	0.7987	0.7645	0.6173	0.2682	0.1729	0.2860
M34	0.5327	0.5371	0.4823	0.3056	0.0880	0.0519	0.0955
CC48	0.7551	0.7565	0.7368	0.6548	0.3148	0.2090	0.3339
A68	0.6128	0.6171	0.5623	0.3771	0.1085	0.0640	0.1178

Date variables

sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
Consent	1	1	1	1	1	1	1

A72	Intercept	1	1	1	1	1	1
	BQ	0.7962	0.7987	0.7645	0.6173	0.2682	0.2860
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366
	Consent						

**A72 Concentration      1101      1293      1423      1280      691      328      295**

M34	Intercept	1	1	1	1	1	1
	BQ	0.5327	0.5371	0.4823	0.3056	0.0880	0.0519
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

**M34 Concentration      510      536      508      369      177      105      115**

CC 48	Intercept	1	1	1	1	1	1	1
	BQ	0.7551	0.7565	0.7368	0.6548	0.3148	0.2090	0.3339
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
CC 48 Concentration		<b>1831</b>	<b>1810</b>	<b>1877</b>	<b>1802</b>	<b>933</b>	<b>451</b>	<b>534</b>
A68	Intercept	1	1	1	1	1	1	1
	BQ	0.6128	0.6171	0.5623	0.3771	0.1085	0.0640	0.1178
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
<b>A68 Concentration</b>		<b>1895</b>	<b>2270</b>	<b>2435</b>	<b>2069</b>	<b>1216</b>	<b>731</b>	<b>549</b>
Concentration in Groundwater		0	0	0	0	0	0	0
Load in pounds per day								
Sum		454	499	636	1068	2869	2957	1279
A72		380	440	592	1071	2544	2120	994
% Difference		0.19	0.13	0.07	0.00	0.13	0.40	0.29
RPD		0.18	0.13	0.07	0.00	0.12	0.33	0.25

ganese Concentration Coefficients					
Bq	sin	cos	sin1	cos1	Consent
1300.01851	258.05023	32.88141	-22.83880	<u>-115.51468</u>	0.000
676.85542	28.85039	45.76225	2.36955	<u>-21.93733</u>	0
2418.14462	55.02265	133.79117	-163.86850	-115.75164	<u>-611.58877</u>
2357.47898	524.74014	10.67654	-7.02235	-157.22271	<u>472.32632</u>

A	S	O	N	D
1	1	1	1	1
268	187	142	92	70
103	71	53	33	25
37	26	20	16	14
122	82	60	38	28
6	8	9	4	3

0.4826	0.5721	0.6378	0.7310	0.7813
0.1997	0.2657	0.3255	0.4348	0.5082
0.5317	0.6145	0.6727	0.7167	0.7465
0.2464	0.3278	0.4016	0.5134	0.5884

-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1	1	1	1	1

1	1	1	1	1
0.4826	0.5721	0.6378	0.7310	0.7813
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447

**503          673          806          927          993**

1	1	1	1	1
0.1997	0.2657	0.3255	0.4348	0.5082
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
<b>199</b>	<b>275</b>	<b>339</b>	<b>423</b>	<b>479</b>

1	1	1	1	1
0.5317	0.6145	0.6727	0.7167	0.7465
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
<b>987</b>	<b>1391</b>	<b>1779</b>	<b>1984</b>	<b>1959</b>

1	1	1	1	1
0.2464	0.3278	0.4016	0.5134	0.5884
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
<b>713</b>	<b>902</b>	<b>1092</b>	<b>1359</b>	<b>1607</b>

0	0	0	0	0
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777	701	644	531	457
728	679	618	460	376
0.07	0.03	0.04	0.15	0.22
0.07	0.03	0.04	0.14	0.19

A72

Chronic TVS at A72

a2      b2

Cd	-3.49	0.7852
Cu	-1.7428	0.8545
Mn	5.8743	0.3331
Zn	0.8669	0.8473

Prediction Equation Coefficients

Hardness AluminumCadmium

B	0.006	1.000	0.006
Intercept	82.304	-26.540	1.020
BQ	200.676	5610.562	1.466
sin	16.936	158.116	0.599
cos	48.860	40.749	0.066
sin1	15.385	127.998	-0.265
cos1	-5.633	6.691	-0.292
Consent			

Month	J	F	M	A	M	J	J
Q	64	63	77	155	682	1196	624
Hardness	277	290	268	196	91	53	72
Al ch	87	87	87	87	87	87	87
Cd ch	2.5	2.6	2.5	1.9	1.1	0.7	0.9
Cu ch	11	11	10	8	4	3	3
Mn ch	2317	2352	2290	2064	1598	1333	1482
Zn ch	279	290	271	208	109	68	90

M 34

Prediction equation coefficients

Hardness AluminumCadmium Copper Iron Zinc

B	0.013	1.00	0.021	0.123	0.06521	0.021
Intercept	60.05228	15.10361	0.91724	14.65129	77.70523	05.25873
BQ	205.02801	38.29032	0.60966	00.98354	70.29706	78.11589
sin	9.24827	69.03843	0.26911	14.16661	89.38888	88.77920
cos	32.30173	79.08681	0.20991	10.17487	38.04002	85.94018
sin1		435.43127	-0.12214	1.04278	86.24646	-17.99615
cos1		123.10453	-0.14689	-3.82920	-12.30367	-45.60154
consent		-265.10754		-10.75402	35.80515	-98.00378

	MONTH	J	F	M	A	M	J	J
Avg monthly	Q	22	22	28	58	266	468	243
	Hardness	255	241	226	170	86	60	76
Chronic Stan	Al, ch	87	87	87	87	87	87	87
	Cd, ch	2.4	2.3	2.1	1.7	1.0	0.8	0.9
	Cu ch	20	19	18	14	8	6	7

Mn	2253	2212	2163	1969	1571	1389	1504
Zn ch	260	248	235	185	104	76	93

# A68 Animas at Silverton

Prediction equation coefficients								
		Hardness		Cadmium	Copper	Manganese	Zinc	
B		0.011	na	na	0.010	0.016		
Intercept		37.945	2.395	5.783	258.473	304.617		
BQ		165.600			1371.923	644.136		
sin			1.712	2.049	611.024	315.451		
cos			0.140	0.729	81.662	-18.603		
sin1			-0.250	-1.520	16.031	-33.783		
cos1			-1.185	-0.472	-263.628	-140.108		
May			-1.936	2.261	-258.699			
consent			-0.714	-1.828	411.428	-67.174		
Animas R	Month	J	F	M	A	M	J	J
	Q	25	25	31	66	329	585	300
	Hardness	168	168	161	134	74	60	76
	Cd,tvs	1.7	1.7	1.7	1.4	0.9	0.8	0.9
	Cu tvs	14	14	13	11	7	6	7
	Mn tvs	1959	1961	1934	1818	1491	1393	1509
ponic stand	Zn tvs	182	183	177	151	91	77	94

# Reaction Equation Coefficients

Copper	Iron	Zinc			
0.100	0.048	0.014			
11.592	325.430	272.266			
-11.516	6156.248	697.432			
5.618	310.323	155.229			
5.955	262.025	37.490			
1.700	-72.066	-37.359			
-0.594	-177.065	-77.421			
-1.491					
A	S	O	N	D	
268	187	142	92	70	
124	158	182	215	248	
87	87	87	87	87	
1.3	1.6	1.8	2.1	2.3	
5	7	7	9	10	
1772	1920	2013	2129	2233	
141	173	195	225	255	

	Acute TVS at M34		Chronic TVS at M34	
	a2	b2	a3	b3
Cd	-3.828	1.128	-3.49	0.7852
Cu	-0.7703	0.9422	-1.7428	0.8545
Mn	4.4995	0.7893	5.8743	0.3331
Zn	0.8904	0.8473	0.8669	0.8473

A	S	O	N	D
103	71	53	33	25
126	151	192	217	253
87	87	87	87	87
1.4	1.6	1.9	2.1	2.3
11	13	16	17	20

1783	1892	2050	2136	2246
144	167	205	227	258

Chronic TVS at A68		
	a2	b2
Cd	-3.49	0.7852
Cu	-1.7428	0.8545
Mn	5.8743	0.3331
Zn	0.8669	0.8473

  

A	S	O	N	D
122	82	60	38	28
109	125	138	155	165
1.2	1.4	1.5	1.6	1.7
10	11	12	13	14
1695	1777	1836	1908	1947
126	142	155	171	180